

PROCEEDINGS OF THE
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ORDINARY MEETING

WEDNESDAY, 7th JUNE, 1961, at 5.30 p.m. (Tea 5 p.m.)

AGENDA

1. Confirmation of the Proceedings of the Ordinary Meeting held on 3rd May, 1961.
2. Recommendations of candidates for Fellowship. First reading.
3. Recommendations of candidates for Fellowship. Second reading.
4. Announcement of election of new Fellows.
5. Additions to the Library [see p. 16].
6. Admission of Fellows.
7. Exhibits.
8. Communications.

1. Dr. L. Davies

Preliminary remarks on the structure of primitive Simuliidae and the probable affinities of the family with Chironomidae

[ABSTRACT]

Two genera discovered in recent years, *Gymnopsis* Stone and *Twinnia* Stone and Jamnback, appear to be primitive Simuliidae, the cephalic form of whose larvae suggests affinities with Chironomidae, although doubts have been cast on this idea by Grenier and Rageau. However, several adult features not hitherto noted in *Gymnopsis* are strongly reminiscent of Chironomidae, particularly the thoracic structure, so that both larvae and adults of this genus show resemblances to that family. In *Twinnia* only the larvae are chironomid-like, while the pupae and adults show most of the features of typical black flies, and closely resemble the same stages in *Prosimulium* Roubaud. Larvae of the latter genus have recently been found to lack head-fans in the first instar only and to show in this stage other chironomid resemblances. An unsolved problem in linking Simuliidae to Chironomidae exists in attempting to find possible stages in the change from an auditory to a visual mechanism of recognition of the female by the swarming male.

2. Dr. R. W. Howe

Observations on the developmental periods of stored products insects

[ABSTRACT]

The intrinsic rate of increase of an insect species breeding in an unrestricted environment is inversely related to its developmental period which is conveniently represented by its mean. The typical emergence curve obtained from a population of eggs laid simultaneously is bell-shaped but skew. It could be a Type III Pearson curve but is usually handled as a log-normal curve. The variance of the developmental period is usually proportional to the mean, and the emergence curves are of a similar shape, so that the means of experiments can be compared by statistical tests or graphically. The graphs of results usually appear as smooth curves.

If experimental results are irregular, it usually indicates that the experimental variable has no consistent effect, but three possibilities should be considered when a trend is broken by irregularities.

(1) A break may occur in the way in which the variable factor operates, causing a break in the curve. This happens at fringe conditions where high mortality may decrease the developmental period.

(2) The postulated experimental conditions may not be maintained. In experiments at varying density the temperature often varies from experiment to experiment.

(3) The experimental population may be polymorphic for the observed character. If one form is represented by only a small proportion of individuals, it may be included in only a few of the experiments and affect the means obtained. Many stored products insects populations appear to include about five per cent. of a slow growing strain in balance with the normal strain. This shows up as a hump or long tail at the end of the emergence curve. With *Tribolium castaneum* (Herbst) it is possible to distinguish the two strains by weight. In other species the strains are clearly distinct, the slow one usually entering diapause.

NOTICES

The next meeting will be held on *Wednesday, 5th July, 1961* :

(1) **Mr. R. G. Fennah.**—Some aspects of geographical distribution.

(2) **The Alder Woodwasp and its insect enemies.** A film made by Mr. G. H. Thompson and Mr. R. Skinner of the Department of Forestry, University of Oxford.

PROCEEDINGS OF THE ORDINARY MEETING HELD ON 3RD MAY, 1961

Professor G. C. VARLEY, President, in the Chair.

Present, 79 Fellows and 18 Visitors.

The President extended a welcome to Dr. K. Bakker, of Leiden University.

The minutes of the Ordinary Meeting held on 5th April were confirmed and signed by the President.

The names of the following candidates for election were read for the first time : Mrs. Margaret Taggart Armstrong, B.Sc. ; Dr. Hasan Giray, B.Sc., Ph.D. ; and Mr. Robert John Orme.

For the second time (taken as read) : Mr. Terence George Amos, B.Sc. ; Dr. Armando J. Farre Castel-Branco ; Mr. John Thomas Clark, M.A. ; Mr. Kunnath Gopinath ; Professor David N. Kobakhidze ; Mr. John Alan Morton ; Professor G. Madan Mohan Rao ; Mr. Richard Henry Watmough ; and Mr. Euan Cameron Young.

The Secretary read the names of the following newly elected Fellows of the Society : Mr. Samuel Bankole Bernard, Federal Department of Agricultural Research, Ibadan, Nigeria ; Mr. John Frederick Burton, B.B.C. Natural History Unit, Broadcasting House, Bristol, 8 ; Mr. Fernando Joseph Rajanayagam Antony Gnanarajah, B.Sc., St. Joseph's College, Anuradhapura, Ceylon ; Mr. Sayid Mussam Husain, 22, Tabor Road, London, W.6 ; Mr. Mohamed Abdel Meguid Hafiz, Queen Elizabeth College, London, W.8 ; Mr. John Anthony Richardson, 91, Barrack Street, Colchester, Essex ; Dr. Brijesh Kumar Srivastava, M.Sc., D.Phil., University of Saugor, Saugor (M.P.), India ; and Dr. Fred L. Waterhouse, M.Sc., Ph.D., Department of Natural History, Queen's College, Dundee.

Dr. G. J. Peakin signed the Obligation Book and was admitted a Fellow of the Society.

The following papers, accepted for publication in the *Transactions*, were read in title :

"The Himalayan species of the genus *Phyllolabis* Osten Sacken (Diptera : Tipulidae)," by C. P. Alexander.

"A study of the biology of species of the genus *Mesopolobus* Westwood (Hymenoptera : Pteromalidae) associated with Cynipid galls on oak," by R. R. Askew.

"An assessment of some internal characters in the higher classification of the

Curculionidae s.l. (Coleoptera)," by N. A. Aslam. [Communicated by Mr. R. G. Davies.]

"The morphology of some parts of the head and maxillo-labium in larval Trichoptera, with special reference to the Hydropsychidae," by R. M. Badcock.

"A contribution to the biology and taxonomy of some Palaearctic species of *Tetramesa* Walker (Hymenoptera: Eurytomidae), with particular reference to the British fauna," by M. F. Claridge.

"The taxonomy of the British species of *Entomobrya* Rondani (Collembola)," by A. South.

"The analysis of numbers and distribution in an aerial population of Macrolepidoptera," by L. R. Taylor and C. I. Carter.

"Studies in Black Flies (Diptera: Simuliidae) caught in a light trap in Scotland," by C. B. Williams and others.

Dr. H. E. Hinton gave a paper on the respiratory systems of insect eggs, an abstract of which appeared on page 9.

In the discussion which followed, Mr. M. J. Way asked whether the efficiency of plastron in standing up to high water pressure was secondary to the efficiency of oxygen extraction. Dr. Hinton replied that the two functions were separate and not really related.

Dr. C. G. Johnson asked if any information was available about eggs buried in tissue, to which Dr. Hinton replied that, although he had seen eggs of Dytiscidae which were buried in tissue he had not been able to carry out much work on them and they did not seem to be of great interest because of lack of plastron.

In reply to a question by Mr. M. E. Solomon on how cells laid down these complicated structures, Dr. Hinton said he had not himself studied this; the only information known to him was in a paper by Korschelt published in 1887 [Zur Bildung der Eihüllen der Mikropylen und Chorionanhänge bei den Insekten].

The President asked whether the plastron was water-filled until the egg was laid. Dr. Hinton replied that this was generally so. In all Diptera the plastron always became air-filled while the egg was in the common oviduct.

Dr. Hinton also said, in reply to an enquiry, that he had no information on the effect of friction on the plastron.

Mr. L. P. Lefkovitch gave a paper on food quantity and density effects in pre-adult *Cryptolestes turcicus* (Grouv.) (Coleoptera: Cucujidae), an abstract of which appeared on pages 9 and 10.

The discussion which followed was opened by the President, who said he had been very interested to hear the account of this work with *C. turcicus*, the rapid rate of development of which made it a convenient animal for laboratory cultures. He thought this work provided a real contribution towards sorting out what happened in such cultures and wondered whether it would be possible to separate out any more refined methods. Mr. Lefkovitch replied that his work had, of necessity, to be confined to problems in which some economic importance was apparent.

Mr. Way commented that cannibalism appeared not to be essential for normal development since, if the pre-pupae were removed, larvae were able to develop normally. Mr. Lefkovitch agreed that the presence of animal protein did not appear to be essential, and, in reply to Mr. C. N. Hawkins, said that cannibalism appeared to be deliberate.

Mr. E. S. Brown having asked if cannibalism was related to humidity, Mr. Lefkovitch said he had no precise information, but *C. turcicus* did like moist conditions, possibly related to the growth of mould. Cannibalism took place on pupae and pre-pupae only.

Mr. G. Surtees said that an optimum density in the case of this insect had been mentioned and he asked whether, at densities less than the experimental, the curve of rate of development would have fallen. Mr. Lefkovitch replied that he had no evidence on which to base an answer. Mr. R. W. Howe said that the greater the surface area, the slower the rate of growth.

Dr. K. Bakker (a visitor) suggested that the line showing rate of growth and food

quantity in isolated larvae would cross that of groups; Mr. Lefkovitch, agreeing, added that a complication was introduced in this species since the first specimens to pupate are eaten.

In reply to an enquiry by Mr. W. O. Steel, Mr. Lefkovitch said he did not know whether larvae tried to enter cocoons irrespective of whether they contained pupae.

PAUL FREEMAN, *Honorary Secretary*.

ADDITIONS TO THE LIBRARY

Presented

- British Museum (Natural History). *A study of the Aphididae (Homoptera) of West Africa*. By V. F. Eastop. 8vo. London, 1961. [The Trustees of the British Museum.]
- British Museum (Natural History). *Francis Walker's Aphids*. By J. P. Doncaster. 8vo. London, 1961. [The Trustees of the British Museum.]
- Burdick, D. J. *A taxonomic and biological study of the genus Xyela Dalman in North America*. [Univ. Calif. Publ. Ent. 17: 285-356, 1961.] [The Publishers.]
- Fauna Republicii Populare Romîne. Insecta Vol. XI, Fasc. 1. Lepidoptera Familia Aegeriidae*. By A. Popescu-Gorj, E. Niculesci, and A. Alexinschi. 8vo. Acad. Republicii Populare Romîne, 1958. [Dr. A. Popescu-Gorj.]

Purchased

- Bodenheimer, F. S. *Prodromus faunae Palestinae. Essai sur les éléments zoogéographiques et historiques du sud-ouest du sous-règne paléartique*. [Mém. Inst. Egypte 37: 1-284, 1937.]
- Danmarks Fauna*. Bd. 64. Biller 20. *Tillaegsbind*, by V. Hansen, 1958.
- Bd. 66. Tøvinger 2. *Våbenfluer, Klæger M. Fl.*, by L. Lyneborg, 1960. 8vo. København.
- Gilmour, D. *Biochemistry of insects*. 8vo. London: Academic Press, 1961.
- Gressitt, J. L. *Hispine beetles from the South Pacific (Coleoptera: Chrysomelidae)* [Nova Guinea. (N.S.) 8 (2): 205-324, 1957].
- Gullander, B. *Nordens Dagfjärilar*. 8vo. Stockholm, 1959.
- Illies, J. *Wir beobachten und züchten Insekten*. 8vo. Stuttgart, 1956.
- Jeannel, R. *L'édage. Initiation aux recherches sur la systématique des Coléoptères*. [Publ. Mus. nat. Hist. nat., Paris. No. 16]. 4to. Paris, 1955.
- Kasada et al. *Insect larvae of Japan*. 8vo. Tokyo, 1959.
- Klefbeck, E. and Sjöberg, O. *Catalogus insectorum Sueciae*. XVI. *Coleoptera*. [Opusc. Ent. Suppl. 18.] 8vo. Lund, 1960.
- Krieg, A. *Grundlagen der Insektenpathologie*. 8vo. Darmstadt, 1961.
- Porta, A. *Fauna coleopterorum Italica*. Suppl. 3. Folio. Sanremo, 1959.
- Stichel, W. *Illustrierte Bestimmungstabellen der Wanzen. II. Europa (Hemiptera Heteroptera Europae)* Vol. 4. Hft. 19, 20. 8vo. Berlin-Hermsdorf, 1961.
- Das Tierreich*. Lief. 74. *Orthoptera Tettigoniidae (Pseudophyllinae II)*, by M. Beier. 4to. Berlin, 1960.

In addition separates have been presented by Dr. Ch. Ferrière; Mr. R. C. H. Sweeney; Professor V. B. Wigglesworth; Mr. J. F. Burton; Dr. D. S. Kettle; Mr. W. V. Harris; Dr. N. E. Hickin; United States Department of Agriculture; Mr. E. B. Basden; American Entomological Society; Mr. A. L. Capener; Mr. I. W. B. Nye; Mr. F. Wilson; South African Institute for Medical Research; Division of Entomology, Pretoria; Mr. J. D. Bradley; Mr. B. Jobling; Mr. G. F. Burnett; Dr. D. J. Lewis; South London Entomological and Natural History Society; Mr. H. E. Hammond; Rothamsted Experimental Station; Dr. R. O. Brinkhurst; Forest Products Research Laboratory; Milk Marketing Board Library, Thames Ditton; Dr. L. G. Higgins; Dr. L. Sheljuzhko; Mr. J. C. Felton; Dr. C. L. Remington; Dr. P. Becker; Mr. W. H. Potts; Dr. A. M. Massee; Dr. A. Popescu-Gorj; and Stations Fédérales d'Essais Agricoles, Lausanne.